

## ABSTRAK

### PENETAPAN KADAR FLAVONOID TOTAL DAN AKTIVITAS ANTIOKSIDAN EKSTRAK ETANOL *Zingiber officinale* DAN *Zingiber ottensi* DENGAN METODE FRAP

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**Latar Belakang:** Stres oksidatif didefinisikan sebagai kelebihan produksi radikal bebas yang dapat menyebabkan kerusakan sel, kondisi patologis dan kematian sel. Jahe (*Zingiber officinale*) dan bangle hantu (*Zingiber ottensii*) berpotensi sebagai antioksidan. Salah satu senyawa yang memiliki aktivitas antioksidan adalah flavonoid. Penelitian ini bertujuan untuk menentukan kandungan flavonoid dari *Zingiber officinale* dan *Zingiber ottensii* secara kualitatif dan kuantitatif, aktivitas antioksidan serta korelasi flavonoid total terhadap aktivitas antioksidan.

**Metodologi:** Uji kualitatif flavonoid digunakan metode Kromatografi Lapis Tipis (KLT) dan penentuan kadar flavonoid total digunakan metode Alumunium Klorida ( $AlCl_3$ ). Uji aktivitas antioksidan digunakan metode *Ferric Reducing Power* (FRAP). Korelasi kadar flavonoid total terhadap aktivitas antioksidan diuji secara statistik menggunakan *Pearson Correlation*.

**Hasil Penelitian:** Hasil KLT ekstrak *Zingiber officinale* dan *Zingiber ottensii* menunjukkan adanya senyawa flavonoid. Kandungan flavonoid total pada kedua ekstrak masing-masing sebesar  $55,232 \pm 2,430$  mgQE/g dan  $14,924 \pm 0,4699$  mgQE/g. Nilai  $IC_{50}$  *Zingiber officinale* dan *Zingiber ottensii* masing-masing sebesar 15,208 ppm dan 114,559 ppm. Korelasi flavonoid total terhadap aktivitas antioksidan *Zingiber officinale* dan *Zingiber ottensii* sebesar -0,995 dan -0,985.

**Kesimpulan:** *Zingiber officinale* mempunyai aktivitas antioksidan sangat kuat dan *Zingiber ottensii* mempunyai aktivitas antioksidan moderat. Terdapat korelasi tinggi yang negatif dan bersifat signifikan antara flavonoid total terhadap aktivitas antioksidan.

**Kata Kunci:** *Zingiber officinale*, *Zingiber ottensii*, Flavonoid, Antioksidan, Metode FRAP

## ABSTRACT

### DETERMINATION OF TOTAL FLAVONOIDS CONTENT AND ANTIOXIDANT ACTIVITY OF ETHANOL EXTRACTS OF *Zingiber officinale* AND *Zingiber ottensii* BY FRAP METHOD

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**Background :** Oxidative stress is defined as over-production of free radicals which lead to cells damage, pathological condition and cell death. *Zingiber officinale* and *Zingiber ottensii* are known to have antioxidant potential. One of the compounds that have antioxidant activity are flavonoids. This study aims to determine the flavonoid content of *Zingiber officinale* and *Zingiber ottensii* qualitatively and quantitatively, antioxidant activity and the correlation of total flavonoids with antioxidant activity.

**Methodology :** Qualitative analysis of flavonoids using thin layer chromatography method and determination of total flavonoids content was measured using Aluminium Chloride ( $AlCl_3$ ) method. The antioxidant activity was measured using the Ferric Reducing Antioxidant Power (FRAP). The correlation of total flavonoids with antioxidant activity in statistically test with Pearson Correlation.

**Results :** The results of TLC extracts of *Zingiber officinale* and *Zingiber ottensii* showed the presence of flavonoids. The total flavonoid content in both extracts was  $55,232 \pm 2,430$  mgQE / g and  $14,924 \pm 0,4699$  mgQE / g.  $IC_{50}$  *Zingiber officinale* and *Zingiber ottensii* values were 15,208 ppm and 114,559 ppm. Correlation of total flavonoids to the antioxidant activity of *Zingiber officinale* and *Zingiber ottensii* were -0.995 and -0.985, respectively.

**Conclusions :** *Zingiber officinale* has very strong antioxidant activity and *Zingiber ottensii* has moderate antioxidant activity. There is a significant high negative correlation between total flavonoids and antioxidant activity.

**Keywords :** *Zingiber officinale*, *Zingiber ottensii*, Flavonoids, Antioxidant, FRAP Method